

REMARKS

Claims 1-4 and 6-25 are currently pending. Support for the amendment to claim 1 may be found in the specification as originally filed, for example, at page 21, lines 9-11 and original claim 5.

I. The Objections to the Claims

Claims 1- 24 are objected to as allegedly containing “informalities.”

Applicants claims have been amended for clarity and in a manner substantially the same as suggested by the Examiner. Claims 2 and 9 are amended in a manner slightly different than suggested by the Examiner. It is respectfully submitted that Applicants’ claims are clear and definite and it is requested that the objection to the claims be reconsidered and withdrawn.

II. The Rejections Based on Verrall

Claims 1-8, 11-12, 24 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Verrall (US 6,099,758) as evidenced by Ouderkirk (US 6,573,963).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall, as evidenced by Ouderkirk.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall, as evidenced by Ouderkirk and further in view of Cobb (US 6,515,785).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall, as evidenced by Ouderkirk and further in view of Ouderkirk.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and as evidenced by Kameyama (US 6,088,079).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and further in view of Kashima (US 6,961,106).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and further in view of Taber (US 5,731,886).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and further in view of Kawata (US 5,518,783).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and further in view of Duncan (US 6,175,400).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and further in view of Sakatani (Abstract, JP 06-082777).

Claims 20-23, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk and further in view of Kameyama (US 6,088,079).

Applicants respectfully submit that the present invention is not anticipated by or obvious over the disclosures of Verrall, "as evidenced by Ouderkirk", alone or in view of the secondary references, and request that the Examiner reconsider and withdraw these rejections in view of the following remarks.

Independent claim 1 has been amended to recite that the photoisomerizable material (c) is at least one photoisomerizable material selected from the group consisting of stilbene and azobenzene. Thus, the photoisomerizable material (c) is not a polymerizable material. That is, stilbene and azobenzene type compounds do not have a polymerizable functional group.

The Examiner's position appears to be that the stilbene derivatives of Verrall could be a photoisomerizable material (c). However, even in the case where the mesogen compound described in Verrall has a compound having a stilbene structure, Applicants' photoisomerizable material (c), stilbene and azobenzene, do not have a polymerizing functional group as a result of the instant amendment.

The broad band cholesteric liquid crystal film of the present invention comprises a cholesteric liquid crystal film obtained by coating on a substrate and polymerizing by ultraviolet radiation a liquid crystal mixture containing

a polymerizable mesogen compound (a),

a polymerizable chiral agent (b) and a photoisomerizable material (c) (wherein the photoisomerizable material (c) is at least one photoisomerizable material selected from the group consisting of stilbene and azobenzene).

It is clear that the photoisomerizable material (c) is a material mixed separately from the polymerizing mesogen compound (a) according to the present invention. Accordingly, the photoisomerizable material (c) in the present invention cannot correspond to the mesogen compound in Verrall.

Therefore, Applicants respectfully submit that Verrall does not teach or suggest the photoisomerizable material (c) in the present invention.

Applicants' specification discusses the effects of the present invention including the addition of the photoisomerizable material (c) to the liquid crystal mixture (page 15, lines 5-25):

If such a photoisomerizable material (c) is added to a liquid crystal mixture and the mixture is illuminated with ultraviolet so that an ultraviolet illumination dosage is distributed in the thickness direction, isomerization from a trans-isomer to a cis-isomer advances in the ultraviolet illumination side. On the other hand, in the opposite side from the ultraviolet illumination side, isomerization from a trans-isomer to a cis-isomer is harder to advance. Therefore, revealed is a positional distribution of a change in ratio of trans-isomer and cis-isomer in the thickness direction, which enables manufacture of a broad band cholesteric liquid crystal film having a selective reflection wavelength bandwidth covering all the region of visible light. A broad band cholesteric liquid crystal film thus obtained works as a broad band circularly polarizing plate and not only has an optical property equal to that of the liquid crystal films disclosed in [known patent literature], but also can decrease a thickness thereof, thereby in addition, enabling low-cost manufacture thereof due to great reduction in manufacturing steps to be realized.

Further, as shown in the inventive examples, a broad band cholesteric liquid crystal film covering visible light was able to be manufactured as a single layer in this way. The comparative examples had a reflection band is narrower as compared with the inventive examples. Thus, the

band is broadened in a cholesteric liquid crystal film using the cholesteric liquid crystal film including a photoisomerizable material (c) according to the present invention.

The secondary references, Ouderkirk, Cobb, Kameyama, Kashima, Taber, Kawata, Duncan, and Sakatani do not overcome the deficiencies in Verrall discussed above.

For the above reasons, it is respectfully submitted that the subject matter of claims 1-4 and 6-25 is neither taught by nor made obvious from the disclosures of Verrall, "as evidenced by Ouderkirk", alone or in view of the secondary references, and it is requested that the rejection under 35 U.S.C. §§102 and 103 be reconsidered and withdrawn.

III. The Double Patenting Rejection

Claims 1, 4, and 6-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1, 3, 7-11, 13-14 of copending Application No. 10/542,065.

Applicants respectfully submit that the present invention is not anticipated by or obvious over claims of the disclosures of copending Application No. 10/542,065 and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

The Examiner did not reject claim 5 based on the claims of copending Application No.10/542,065. Copending Application No.10/542,065 does not recite a photoisomerizable material (c), wherein the photoisomerizable material (c) is at least one photoisomerizable material selected from the group consisting of stilbene and azobenzene. As described in Applicants' specification and in Section II above, the band is broadened in a cholesteric liquid crystal film using a photoisomerizable material (c) according to the present

invention. On the other hand, Copending Application No. 10/542065, page 9, lines 6 to 13, discloses:

In the present invention, on the other hand, a broad band cholesteric liquid crystal changing the pitch continuously is obtained by diffusing a mesogen compound having one polymerizable functional group, and thus the order of change of the chiral pitch is reversed. That is, a broad band cholesteric liquid crystal film having such pitch change as to narrow the pitch length continuously from the side of ultraviolet light irradiation can be obtained in the present invention.

Thus, as described above, the mechanism for broadening the band differs between the present application and copending Application No. 10/542065.

For the above reasons, it is respectfully submitted that the subject matter of claims 1, 4, 6-12 is neither taught by nor made obvious from the disclosures of copending Application No. 10/542065 and it is requested that the obviousness-type double patenting rejection be reconsidered and withdrawn.

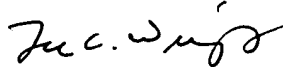
IV. Conclusion

In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the objection to the claims, the rejections under 35 U.S.C. §§102 and 103 and the obviousness-type double patenting rejection be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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